Effect of Sintering Temperature on Functionally Graded Nickel/Alumina Plate

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ABSTRACT

Functionally graded material that consists of gradually changed dual-phase compositions along the thickness direction of its structure has been introduced as an answer to sharp interfaces problems occur while the processing. In order to observe the morphological and shrinkage due to the sintering process, the Ni/Al_2O_3 FG samples were manufactured via powder metallurgy routes under argon atmosphere. This study reveals that the sintering temperature does affects the sintering behaviors including the microstructures and radial dimensions of the FG plates. The numerical simulation is found to be useful to predict the stress concentration area within the structures and consequently improve the design of the FG plates.

KEYWORDS: Finite Element Method (FEM), Functionally Graded Material (FGM), Pressureless Sintering, Residual Stress Calculation, Sintering Temperature

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